Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, DC 20554

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems | ) | CC Docket No. 94-102 |
| | ) | |
| | ) | |

## CONESTOGA WIRELESS COMPANY PETITION FOR WAIVER OF E911 PHASE II LOCATION TECHNOLOGY IMPLEMENTATION RULES

Conestoga Wireless Company, Inc. ("Conestoga"), by its attorneys and pursuant to Section 1.3 of the rules of the Federal Communications Commission ("FCC" or "Commission"), hereby submits this petition for waiver of the Commission's E911 Phase II location technology implementation rules, set forth in Section 20.18(e)-(h).[1] In particular, Conestoga seeks authority to implement the same two-stage hybrid location solution (NSS/E-OTD) that the Commission approved for VoiceStream Wireless,[2] but on a slightly adjusted timetable that accounts for its network vendor's projected general availability dates for the necessary switch software and network elements, and the current unavailability of E-OTD capable handsets in the marketplace. Conestoga notes that the NSS/E-OTD solution is also the subject of a pending waiver request filed by at least one other broadband PCS carrier.[3] As explained below, Conestoga is similarly situated to VoiceStream, and fully satisfies the standard for the requested rule waiver.

---

1 47 C.F.R. § 20.18 (e)-(h).

2 *See* Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911Emergency Calling Systems, CC Docket No. 94-102, *Fourth Memorandum Opinion and Order*, 15 FCC Rcd 17442 (*rel.* September 8, 2000) ("*E911 Fourth Memorandum Opinion and Order*").

3 The FCC is currently seeking industry comment on a waiver request filed by D&E/Omnipoint Wireless Joint Venture, L.P. d/b/a PCS One ("PCS One") in CC Docket No. 94-102. *See* Public Notice, DA 01-1645 (*rel.* July 13, 2001).

Conestoga is a wholly-owned subsidiary of Conestoga Enterprises, Inc. ("CEI"), an integrated communications provider based in Birdsboro, Pennsylvania.[4] Conestoga began providing digital wireless telecommunications in Eastern and Central Pennsylvania in May of 1998. To date, the Company has constructed its broadband PCS network in five (5) Pennsylvania Basic Trading Areas ("BTAs").[5] Conestoga's broadband PCS network utilizes Global System for Mobile Communications ("GSM") air interface technology. As set forth herein, the rationale for granting VoiceStream a waiver applies with equal force to Conestoga. The Commission should therefore grant Conestoga a similar waiver of the E911 Phase II rules, recognizing the schedule for Conestoga's network vendor to complete the delivery, installation and testing of all necessary software and network elements.

## I. INTRODUCTION

As mentioned above, Conestoga utilizes GSM technology throughout its broadband PCS network, which is the same wireless technology utilized by VoiceStream. Conestoga also uses the same network and handset equipment as VoiceStream and has purchased all of its network equipment from the same supplier (*i.e.*, Nortel Networks), as VoiceStream. Moreover, Conestoga's network is geographically surrounded by systems that are licensed to VoiceStream or one of VoiceStream's affiliates.

---

[4] Conestoga notes that on July 25, 2001, CEI announced that it had entered into a definitive merger agreement with NTELOS, Inc. NTELOS provides products and services to customers in Virginia, West Virginia, Kentucky, Tennessee and North Carolina, including wireless digital PCS, dial-up Internet access, high-speed DSL (high-speed Internet access), and local and long distance telephone services. Detailed information about NTELOS is available online at www.ntelos.com.

[5] Conestoga is currently operating its broadband PCS system on nine licensed blocks in the following five northeastern and central Pennsylvania BTAs: Pottsville, PA (Market B360); Reading, PA (Market B370), State College, PA (Market B429); Sunbury-Shamokin, PA (Market B437) and Williamsport, PA (Market B475).

In its *E911 Fourth Memorandum Opinion and Order*, the Commission recognized that the development of ALI capabilities for use by GSM carriers has lagged behind that for carriers using other interfaces, such as AMPS, CDMA, and TDMA.[6] On this basis, the FCC granted VoiceStream a conditional waiver of the E911 rules to allow it to implement a hybrid location technology to achieve Phase II compliance. This hybrid technology described by VoiceStream involves an initial network software solution (the "NSS" component), which makes use of existing network capabilities and provides immediate location information for all 911 calls on the network, followed by implementation of Enhanced Observed Time Difference of Arrival (E-OTD) technology, which requires software upgrades to handsets and associated network upgrades to provide greater location identification accuracy. In granting VoiceStream a conditional waiver of the E911 Phase II rules, the Commission recognized that NSS/E-OTD "may be the only method available to GSM carriers for compliance with Phase II for some time."[7] The specific Phase II implementation schedule that the Commission approved for the VoiceStream NSS/E-OTD solution is as follows:

- Implement a network safety solution that provides baseline location information for all wireless 911 calls no later than December 31, 2001.[8]
- By October 1, 2001, ensure that 50 percent of all new handsets activated are Enhanced Observed Time Difference of Arrival (E-OTD)-capable.
- Effective October 1, 2001, ensure that all E-OTD-capable handsets comply with an accuracy requirement of 100 meters for 67 percent of calls, 300 meters for 95 percent of calls.
- By March 31, 2002, ensure that 100 percent of all new handsets activated are E-OTD-capable.

---

6 *Fourth Memorandum Opinion and Order*, at para. 56.

7 *Id.*

8 The accuracy requirement for this baseline location information is 1000 meters for 67 percent of calls. *E911 Fourth Memorandum Opinion and Order* at para. 61.

- Ensure that all new E-OTD-capable handsets activated on or after October 1, 2003 comply with an accuracy requirement of 50 meters for 67 percent of calls, 150 meters for 95 percent of calls.

- Report the results of all trials and tests of its ALI technology and of actual operational deployment of its ALI technology and results semi-annually beginning October 1, 2000 and continuing through October 1, 2003.

Starting in the 4th Quarter of 2000, Conestoga has consulted with Nortel to determine what software upgrades and additional network elements are needed for it to implement NSS/E-OTD throughout its network, and to come up with a realistic timetable for Conestoga to expect delivery and installation of these necessary upgrades. According to Nortel, Conestoga will need to install GSM13 switch software and BSC v12.4+ upgrades in its base stations, as well as to deploy new network elements including a Gateway Mobile Location Center ("GMLC"), a Serving Mobile Location Center ("SMLC") and numerous Location Monitoring Units ("LMUs") throughout its network. However, according to recent correspondence from Nortel, none of these components is currently available, and Nortel has not conducted any field trials of the accuracy and reliability of these location technology solutions.[9] Moreover, in recent discussions with its handset vendor, Conestoga learned that Nokia is still in the process of testing E-OTD prototype handsets, and it does not does not expect to have handsets available for

---

[9] According to e-mail correspondence dated August 3, 2001 from Nortel Networks ("*August 3rd E-OTD Availability Statement*"), provided below as Attachment A, the general availability timetable for necessary elements of the NSS/E-OTD solution are as follows:

| Component | Role | GA Date |
|---|---|---|
| GSM13 | Switch software | Q3 2001 |
| V12.4+ | RF access subsystem | Q4 2001 |
| SMLC release 1.0 | NSS location solution | Q1 2002 |
| SMLC release 2.0 | E-OTD support | Q2 2002 |
| GMLC | PSAP interface | Q1 2002 |
| LMU | E-OTD support | Q2 2002 |

Nortel indicates that "[t]his schedule represents Nortel Networks' current plan. This plan could be altered by a number of factors, including the availability of handsets for testing and resolution of technical issues identified through interoperatiblity testing of the E911 technology with other vendors' technology contributions." *See* Attachment A, *August 3rd E-OTD Availability Statement*.

commercial distribution before 2002.[10] Therefore, even assuming that Nortel and Nokia are able to meet their projected availability dates,[11] and the parties are able to complete installation and testing of these components in Conestoga's network without delay, it appears that Conestoga will be unable to meet the same Phase II implementation schedule that the Commission approved for VoiceStream almost one year ago in the *E911 Fourth Memorandum Opinion and Order*. Accordingly, Conestoga respectfully requests the Commission to recognize these changed circumstances and to grant Conestoga authority to implement the NSS/E-OTD solution on a timetable that conforms with the realistic availability of the necessary technology in the marketplace.

## II. THE PUBLIC INTEREST WOULD BE SERVED BY THE GRANT OF CONESTOGA'S REQUEST FOR A WAIVER OF THE PHASE II E911 RULES

The public interest would be served by the grant of Conestoga's request for a waiver of the Phase II E911 rules. Conestoga is providing a valuable GSM service to the public. GSM offers certain distinct advantages, including unparalleled voice quality and full-featured seamless roaming between GSM networks in North America and around the world By constructing its GSM system, Conestoga has extended the GSM "footprint" in the United States, to the benefit of millions of GSM customers, such as those of VoiceStream. Having committed to GSM technology, and having spent millions of dollars on construction of its network, Conestoga is limited to the E911 solutions that are suitable for the GSM format. The E911 Phase II implementation issues presented by

---

[10] Representatives of Conestoga spoke with Clay Simmons, a Technical Account Manager for Nokia, on August 7, 2001. Mr. Simmons confirmed that Nokia is currently in the process of field testing prototype E-OTD compatible handsets, and that such devices would not be commercially available by October 1, 2001. According to Mr. Simmons, the company expects to have E-OTD capability for a limited portion of its product line by Q1 2002.

[11] In this regard, it is Conestoga's understanding that the GSM13 switch software upgrade from Nortel, which is required to implement NSS and which is scheduled to be generally available in Q3 2001, is not yet available as of today.

Conestoga are the same as those presented by VoiceStream and other carriers that operate wireless networks using GSM air interface technology. NSS/E-OTD still appears to be the only viable solution currently available for GSM carriers to implement E911 Phase II capability, and Conestoga is not aware of any other solution that has been tested successfully with the Nortel GSM infrastructure, and that could be made available to Conestoga on a suitable timetable.

Generally, the Commission's rules may be waived for good cause shown.[12] Waiver is appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.[13] In the case of E911, the FCC has recognized that there could be instances where technology-related issues or exceptional circumstances may mean that deployment of Phase II may not be possible by October 1, 2001, and indicated that these cases could be dealt with through individual waivers as these implementation issues are more precisely identified.[14] The situation presented by Conestoga, and its use of GSM air interface technology throughout its broadband PCS network, is precisely the same "special circumstance" that led the Commission to grant a conditional waiver of the E911 Phase II rules to VoiceStream. Conestoga is not aware of any other E911 Phase II solution that is readily available for GSM technology besides the two-stage NSS/E-OTD solution discussed in the *E911 Fourth Memorandum Opinion and Order*. Moreover, as a regional carrier, Conestoga is too small to devote the substantial resources necessary to develop an alternative technology, and lacks the purchasing power domestically and abroad to influence suppliers to develop and implement NSS/E-OTD

---

12 47 C.F.R. § 1.3.

13 *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) citing *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

14 *See E911 First Report and Order*, 11 FCC Rcd at 18710, 18718.

equipment. Thus, Conestoga's need for additional time to achieve full E911 Phase II capability is due to circumstances beyond its control.

In light of Conestoga's dependence on Nortel for providing the network functionality to support NSS / E-OTD capability throughout its GSM-1900 network, and Nortel's most recent general availability timetable for the necessary software and components, Conestoga believes it is capable of deploying Phase II capability using the NSS / E-OTD solution in accordance with the following schedule:

- Implement a network safety solution that provides baseline location information for all wireless 911 calls no later than the end of Q2 2002, *i.e.* within 3 months of "general availability" of software & network elements.
- By the end of Q2 2002, ensure that 50 percent of all new handsets activated are Enhanced Observed Time Difference of Arrival (E-OTD)-capable.[15]
- Subject to the accuracy standards of handsets made available from Nokia, by the end of Q2 2002 ensure that all E-OTD-capable handsets comply with an accuracy requirement of 100 meters for 67 percent of calls, 300 meters for 95 percent of calls.
- By the end of Q1 2003, ensure that 100 percent of all new handsets activated are E-OTD-capable.
- Ensure that all new E-OTD-capable handsets activated on or after October 1, 2003 comply with an accuracy requirement of 50 meters for 67 percent of calls, 150 meters for 95 percent of calls.
- Report the progress of its deployment of ALI technology and of actual operational results semi-annually from date waiver granted through October 1, 2003.

Conestoga has been diligent in pursuing a Phase II solution for its GSM network. In this regard, Conestoga's managers and executives obtained and reviewed various *ex parte* filings of VoiceStream and its predecessors in interest to learn about the NSS/E-

[15] Assuming E-OTD capable handsets are available to Conestoga beginning in Q1 2002, this is a reasonable timeframe given Conestoga's current inventory of handsets, and indications from Nokia that only a portion of its product line is expected to be E-OTD capable by the end of 2001.

OTD technology in the 4th quarter of last year. At this time, Conestoga's network manager contacted Cambridge Positioning Systems, Ltd. ("CPS"), the company that initially developed NSS/E-OTD technology, to determine what network upgrades and specialized handsets would be necessary for Conestoga to achieve Phase II compliance along the same schedule as VoiceStream. Representatives of CPS indicated that they were not in a position to comment on availability dates, and referred Conestoga to its equipment vendors. Conestoga first contacted Nortel to inquire about the availability of NSS / E-OTD in the 4th quarter of 2000. At that time, Nortel was unable to report on its work with this technology, the results of any testing, or to provide Conestoga with a likely product availability schedule and pricing information. Without reliable information in this regard, and in light of a lack of alternative Phase II solutions that have been developed and tested in conjunction with Nortel's GSM-1900 technology, it would be unreasonable to assume that Conestoga could have pursued an alternative path to achieve compliance with the Commission's E911 mandates.[16] Nevertheless, Conestoga has undertaken concrete steps necessary to come as close as possible to full compliance. Conestoga has selected E-OTD as its Phase II technology, the Company has determined what software and network equipment it will need to implement this capability, and has begun the process of ordering the necessary upgrades. Because Conestoga has provided the FCC with evidence of its efforts to achieve compliance, and because Conestoga's request is specific, focused, limited in scope, and provides a clear path to full compliance, the Commission should grant Conestoga's request to deploy the NSS / E-OTD Phase II

---

[16] According to information posted on the web site for Cambridge Positioning Systems, E-OTD has been selected by all major US GSM mobile operators as their technology of choice for compliance with the Commission's E911 mandates. *See* http://www.cursor-system.com/sitefiles/press/PR01-190701.htm.

solution throughout its network on a timetable that is adjusted to reflect current realities in the network equipment and handset marketplace.[17]

## III. CONCLUSION

As set forth above, Conestoga submits that it is in the public interest for the FCC to grant Conestoga a waiver that will allow it to implement the same E911 Phase II hybrid location technology as VoiceStream.

Respectfully submitted,

**Conestoga Wireless Company, Inc.**

By WD Chamblin (W)
William D. Chamblin, III
President

Conestoga Wireless Company, Inc.
215 W. Philadelphia Ave.
Boyertown, PA 19512
(610) 367-1200
(610) 367-1207 (fax)

John A. Prendergast
D. Cary Mitchell
Blooston, Mordkofsky, Dickens,
Duffy & Prendergast
2120 L Street, NW Suite 300
Washington, DC 20037

(202) 659-0830
(202) 828-5568 (fax)

Filed: August 9, 2001

---

[17] The Commission has indicated that Phase II waiver requests should be specific, focused and limited in scope, and with a clear path to full compliance. *See E911 Fourth Memorandum Opinion and Order* at para. 44.

ATTACHMENT A

August 3rd E-OTD Availability Statement
from Nortel Networks

-----Original Message-----
From: Smith, Tony [RICH1:5884-M:EXCH]
Sent: Friday, August 03, 2001 10:26 AM
To: Kuzemka, John [OMGA:9206:EXCH]
Cc: Trauss, Thomas [OMGA:9234:EXCH]; Pile, Wayne [OMGA:9206-M:EXCH]; MacLaren, Peter [BOIS:0970-M:EXCH]; Calmenson, Louis [RICH1:7784-M:EXCH]; Kauffman, Douglas [RICH1:7784-M:EXCH]; Emery, Christopher [BRAM:D002-M:EXCH]

Subject: RE: Questions re: E911 and Nortel's GSM Networks
Importance: High

John:

Some answers to the questions posed by the Conestoga attorneys are provided here. The answers are in the order of the questions posed. Has Conestoga ordered the necessary hardware and software components? In addition, has Conestoga made arrangements with a handset supplier to provide E-OTD equipped handsets? I presume no based on the last question that was asked by the attorneys. In regard to pricing information, for Product and for Professional services, I advise you to approach Louis Calmenson for assistance in preparing a quotation to the customer.

Would Conestoga be correct in assuming that NSS/E-OTD is still the only Phase II location solution available in the near term for GSM systems?

In your question, when NSS is referenced, we assume that you mean Network Software Solution.

Conestoga may choose from among a variety of location solutions. Nortel Networks is aware that VoiceStream has chosen to implement an E-OTD location solution after first implementing a Network Software Solution (NSS). Carriers who intend to transition to GSM, such as Cingular and AT&T Wireless, have proposed a similar approach - first a network supported solution using an "advanced timing" technique for location followed by implementation of E-OTD. While these carriers have all chosen E-OTD, other technology choices, such as network overlay and handset assisted GPS, theoretically exist for GSM operators. It should be noted however Nortel Networks has been unable to identify a GSM GPS handset supplier at this time whereas E-OTD Handsets are available for use in the Oct. 2001 timeframe (Cingular Waiver request to FCC, July 2001).

Nortel Networks supplies only the core networking technology necessary to work with the location technology. To determine when the various location technologies, besides E-OTD might be available, we suggest that Conestoga contact the various vendors of those technologies. Nortel Networks will be pleased to assist Conestoga with identification of various location technology vendors.

What software and/or hardware upgrades will be needed by Conestoga in order to implement NSS/E-OTD?

To implement NSS/E-OTD on the network, Conestoga requires GSM13, BSC v12.4+ upgrades, as well as deployment of new network elements specifically a Gateway Mobile Location Center (GMLC), Serving Mobile Location Center (SMLC) and Location Monitoring Units (LMUs). The general availability timetable for these elements is given in the following table:

| Component | Role | GA Date |
|---|---|---|
| GSM13 | Switch software | Q3 2001 |
| V12.4+ | RF access subsystem | Q4 2001 |
| SMLC release 1.0 | NSS location solution | Q1 2002 |
| SMLC release 2.0 | E-OTD support | Q2 2002 |
| GMLC | PSAP Interface | Q1 2002 |
| LMU | E-OTD support | Q2 2002 |

This schedule represents Nortel Networks' current plan. This plan could be altered by a number of factors, including the availability of handsets for testing and resolution of technical issues identified through interoperability testing of the E911 technology with other vendors' technology contributions. Further, it should be noted that as carriers request support for implementing location solution updates to their respective networks, a peak support resource demand is anticipated in Q1, Q2 of 2002. Nortel Networks will make every effort to respond to the peak demand but will prioritize based on Purchase Orders (POs) received.

Can Nortel share with Conestoga the results of its latest field tests involving NSS/E-OTD? How does Notel view these test results?

Nortel Networks has not conducted any field trials of the accuracy and reliability of the location technology solutions. Conestoga may be able to obtain some data from the VoiceStream filings with the FCC on the accuracy and reliability of the NSS/E-OTD solution.

Assuming the company were to purchase the necessary upgrades, will Conestoga be able in implement NSS throughout its network by the end of 2001?

Nortel Networks must validate the NSS and E-OTD solutions prior to general availability. Nortel Networks will make the Network Software Solution available for general network deployment in Q1 2002.

If Conestoga were to receive a valid PSAP request for Phase II service, would all of the necessary software / hardware be available to Conestoga within six months, or does Nortel anticipate any delays?

Please refer to the general availability timetable above. In reality the precise answer to the question is dependent upon when a valid request from a PSAP is received by Conestoga.

Is there any possibility that the necessary upgrades for NSS or E-OTD will not be available to smaller carriers on the same timetable as VoiceStream?

General availability means that the software and/or hardware is available to all customers. Once the hardware and software is generally available, it will take time to provide to all customers. Nortel Networks does provide the hardware and software prior to general availability to certain customers who are testing partners. The testing does not include all of the network of the testing partner, rather the testing is limited to certain parts of the testing partner's network. As noted above, Nortel Networks support resources for necessary network upgrades for E-911 will be constrained.

Does Nortel know anything about the availability of E-OTD capable handsets? Whose E-OTD handsets is Nortel using in its field tests? Can you provide us with appropriate contacts with these handset manufacturers?

While Nortel Networks does not have a complete list of handset vendors who either support or intend to support E-OTD, possible vendors include Nokia, Ericsson and Motorola. Nortel Networks could supply Conestoga with the names of individuals with Ericsson and Nokia who can provide availability information.

I hope the information provided here provides the necessary input to Conestoga's attorneys. Please contact me if there are further questions or requests for clarification. As noted however, please discuss E-911 Phase 2 upgrade pricing directly with Louis Calmenson.

Regards,
Tony